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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/032,056	12/31/2001	Byeong-Dae Choi	053785-5045	5637

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EXAMINER	
WARREN, MATTHEW E	
ART UNIT	PAPER NUMBER
2815	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/032,056	CHOI, BYEONG-DAE	
	Examiner	Art Unit	
	Matthew E. Warren	2815	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 May 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14 and 16-29* is/are pending in the application.

4a) Of the above claim(s) *16-29* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *5/23/07, 7/16/07*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

This Office Action is in response to the RCE and Amendment filed on May 23, 2007.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Applicant's Prior Art Figures 2 and 3F (APAF) in view of Kakuda et al. (US 5,162,933).

In re claim 1, APAF 2 and 3F show an array substrate for a liquid crystal display device, comprising a substrate (22) a plurality of gate lines (25) arranged transversely on the substrate; a plurality of data lines (27) disposed orthogonal to the plurality of gate lines. A plurality of thin film transistors is formed on the substrate adjacent to intersections of the gate lines and the data lines. Each thin film transistor includes a gate electrode (32), a gate insulation layer (41), an active layer (45), an ohmic contact layer (47), a source electrode (33), the source electrode extended from each of data lines, and a drain electrode (35). A plurality of pixel electrodes (17) are disposed at pixel regions (P) defined by the intersections of the gate lines and the data lines wherein each pixel electrode

connected to a corresponding one of the drain electrodes. A metal layer (28) is formed at peripheral portions of the drain electrode to extend from the pixel electrode. The APAF shows all of the elements of the claim except the metal layer formed on an entire surface of each of the data lines and the source electrode. Kakuda et al. shows (figs. 3 and 4) an LCD device having data line (11) with a metal layer formed on the entire surface. A source electrode (22) extends from the data line (col. 4, lines 50-53) and is also covered with a metal layer (11b in fig. 4). With such a configuration, the resistance of the data lines is reduced. (col. 7, lines 51-55). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the data line of the APAF by forming a metal layer on the entire data line as taught by Kakuda to reduce the resistance of the data lines.

In re claims 2 and 11, the APAF shows (fig. 3B) that the gate insulation layer (41) is disposed on the gate electrode or a plurality of gate electrodes as shown in figure 2.

In re claim 3, the APAF shows (fig. 3B) that the active layer (45) is disposed on the gate insulation layer, and the ohmic contact layer (47) is disposed on the active layer.

In re claim 4, the APAF (fig. 3F) shows that the source electrode (33) and the drain electrode (35) are disposed on the ohmic contact layer.

In re claims 5 and 6, the APAF shows (fig. 2) that the source electrode extends from one of the data lines and the drain electrode extends from one of the pixel electrodes.

In re claim 7-10, the APAF discloses [0009] that the drain electrode and source electrode include at least a transparent conductive material (ITO). Each data line includes at least the transparent conductive material (ITO). Each pixel electrode (17) includes the transparent conductive material (ITO). The transparent conductive material is selected from a group including indium tin oxide, indium zinc oxide, zinc oxide, tin oxide, and indium oxide.

In re claim 12, Kakuda discloses (col. 7, lines 8-28) that the materials of the metal layer are selected from the group including Au, Ag, Cu, and Al.
In re claim 14 and 15, the APAF shows (fig. 3F) that the metal layer (28) is formed at peripheral portions of the plurality of pixel electrodes and at peripheral portions of the drain electrode.

Response to Arguments

Applicant's arguments filed with respect to claims 1-14 have been fully considered but they are not persuasive. The applicant primarily asserts that the prior art references do not show all of the elements of the claims, specifically that the APAF and Kakuda et al. fail to show that a metal layer is formed on an entire surface of each of the data lines and the source electrode. The examiner believes that the cited references show all of the claims. As stated in the rejection above, Kakuda discloses that a source electrode extends from each of the data lines and shows (fig. 4) that the metal layer (11b) is formed on the source electrode (22). The applicant implies that the metal layer is formed on an entire surface of each of the data lines and on an entire surface of the source electrode

and concludes that Kakuda does not disclose this limitation. However, the grammatical structure of the claim allows for a different interpretation of the limitation in question. The examiner interprets the claim to mean that the metal layer is formed on an entire surface of each of the data lines and on the source electrode (not the entire surface of the source electrode). With such an interpretation, Kakuda cures the deficiencies of the APAF and therefore shows all of the elements of the claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew E. Warren whose telephone number is (571) 272-1737. The examiner can normally be reached on Mon-Thur and alternating Fri 9:00-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Parker can be reached on (571) 272-2298. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Matthew E. Warren
August 14, 2007